

CLAIMS

What is claimed is:

1. A keyboard assembly comprising:

a plurality of keyboard sections, said keyboard sections foldable with respect to each other between a folded position and an unfolded position, said keyboard sections being generally coplanar when in said unfolded position and stacked when in said folded position, wherein said plurality of keyboard sections comprises a first keyboard section, a second keyboard section, a third keyboard section, and a fourth keyboard section;

at least one hinge connecting said second and said third keyboard sections;

a first double hinge connecting said first and said second keyboard sections, said first double hinge including a first hinge member; and

a second double hinge connecting said third and said fourth keyboard sections, said second double hinge including a second hinge member.

2. The keyboard assembly of claim 1 wherein said keyboard sections each include a keyboard frame, said keyboard frames, said first hinge member, and second hinge member cooperating to form a self-contained housing when said keyboard sections are in said folded position.

3. The keyboard assembly of claim 1 wherein said first hinge member and said second hinge member are shaped to fit together to form one side of a self-contained housing.

1 4. The keyboard assembly of claim 2 wherein said first double hinge includes an
2 outer pin connecting said first keyboard section to said first hinge member and an
3 inner pin connecting said second keyboard section to said first hinge member;
4 said second double hinge includes a inner pin connecting said third keyboard
5 section to said second hinge member and an outer pin connecting said fourth keyboard
6 section to said second hinge member;
7 said at least one hinge includes a central pin connecting said second keyboard
8 section and said third keyboard section;
9 wherein when said keyboard sections are in said folded position, said inner pins
10 of said first and said second double hinges and said central pin of said at least one
11 hinge are all coplanar.

1 5. The keyboard assembly of claim 1 wherein said first keyboard section and said
2 second keyboard section each include a set of keys slidable over said respective first and
3 second double hinges.

1 6. A keyboard assembly comprising:
2 four keyboard sections, each keyboard section hingedly connected to an adjacent
3 section, said keyboard sections foldable with respect to each other between a folded
4 position and an unfolded position, said four keyboard sections being generally
5 coplanar when in said unfolded position and stacked when in said folded position,
6 each of said four keyboard sections including a frame, each frame having a side wall

7 shaped to nest with an adjacent side wall when said keyboard sections are in said
8 folded position.

1 7. The keyboard assembly of claim 6 wherein said side walls and at least two of said
2 frames form a self-enclosed housing for said keyboard assembly in said folded position.

1 8. The keyboard assembly of claim 7 wherein said four keyboard sections include a
2 first frame, a second frame, a third frame, and a fourth frame;
3 a single hinge connecting said second and said third frames;
4 a first double hinge connecting said first and said second frames, said first double
5 hinge including a first hinge member; and
6 a second double hinge connecting said third and said fourth frames, said second
7 double hinge including a second hinge member;
8 said first hinge member and said second hinge member are shaped to cooperate
9 with each other to form one side of said self-contained housing.

1 9. The keyboard assembly of claim 8 wherein said first hinge member and said
2 second hinge member releasably lock together when said keyboard sections are in said
3 folded position.

1 10. A keyboard assembly comprising:
2 a first section having a first frame and a first plurality of keys, said first plurality
3 of keys coupled to a first base, said first base is slidable relative to said first frame;

4 a second section coupled to said first section, said second section having a second
5 frame and a second plurality of keys coupled to said second frame, said first plurality of
6 keys and said first base are laterally movable relative to said second plurality of keys;

7 a flexible circuit including a first panel disposed between said first plurality of
8 keys and said first base, said flexible circuit further including a bridge portion extending
9 from said first panel and between said second frame and said second plurality of keys.

1 11. The keyboard assembly of claim 10 further comprising a flexible guard piece
2 mounted over said bridge portion, said flexible guard piece having a first portion
3 attached to said first frame and a second portion extending from said first portion and
4 between said bridge portion and said second plurality of keys, wherein said bridge
5 portion is slidable under said flexible guard piece when said first section and said
6 second section are folded toward each other.

1 12. A keyboard assembly comprising:

2 four keyboard sections, said keyboard sections foldable with respect to each other
3 between a folded position and an unfolded position, said four keyboard sections being
4 generally coplanar when in said unfolded position and stacked when in said folded
5 position;

6 a connector associated with one of said keyboard sections, said connector adapted
7 for electrical connection to an information appliance; and

8 a slidable support coupled to at least one of said keyboard sections, said slidable
9 support providing a docking connection for said information appliance.

1 13. The assembly of claim 12 wherein said connector is on a telescoping frame
2 wherein said telescoping frame is movable from a hidden position to an extended
3 position.

1 14. The assembly of claim 13 wherein said telescoping frame includes a support leg
2 attached to said telescoping frame, wherein said support leg holds said connector in a
3 selected position when said frame is moved to said extended position.

1 15. The assembly of claim 12 further comprising a telescoping frame movable from
2 a hidden position to an extended position, and a support member operatively
3 associated with said telescoping frame, said support member being biased by said
4 telescoping frame to a deployed position when said telescoping frame is in said
5 extended position.

1 16. A keyboard assembly as in claim 10 wherein said keyboard is collapsible.

1 17. A keyboard assembly as in claim 10 further comprising:
2 a first flexible guard piece disposed over said first frame and said second frame
3 and being fixedly coupled to one of said first frame and said second frame.

1 18. A keyboard assembly as in claim 17 further comprising:
2 a second flexible guard piece disposed over said first frame and said second
3 frame and being fixedly coupled to one of said first frame and said second frame, and
4 wherein said bridge portion comprises at least one loop.

1 19. A keyboard assembly as in claim 18 wherein one of said first flexible guard piece
2 or said second flexible guard piece is fixedly coupled to said bridge portion.

1 20. A keyboard assembly as in claim 19 wherein said keyboard assembly is foldable
2 and said first section is rotatably coupled to said second section and said bridge portion
3 moves relative to at least one of said first frame and said second frame as said first
4 section is rotated relative to said second section.

1 21. A keyboard assembly as in claim 20 wherein at least one hinge couples said first
2 section to said second section and wherein said bridge portion and said first flexible
3 guard piece and said second flexible guard piece extend over said at least one hinge.

1 22. A keyboard assembly as in claim 21 wherein said at least one hinge comprises a
2 double hinge.

1 23. A keyboard assembly as in claim 17 wherein said keyboard assembly is foldable
2 and said first section is rotatably coupled to said second section and said bridge portion
3 moves relative to at least one of said first frame and said second frame as said first
4 section is rotated relative to said second section.

1 24. A keyboard assembly as in claim 11 further comprising a bottom flexible guard
2 piece mounted under said bridge portion above said first frame and said second frame
3 and being fixedly attached to said bridge portion and to said second frame.

1 25. A keyboard assembly comprising:
2 a first section having a first set of keys;
3 a second section having a second set of keys;
4 a double hinge rotatably coupled to said first section and to said second section,
5 wherein said first set of keys is movable over said double hinge relative to said second
6 set of keys.

1 26. A keyboard assembly as in claim 25 wherein said keyboard assembly is a foldable
2 keyboard which comprises at least three sections.

1 27. A keyboard assembly as in claim 25 wherein said double hinge comprises a first
2 axle coupled to said first section and a second axle coupled to said second section and a
3 hinge member coupled to said first axle and said second axle.

1 28. A keyboard assembly as in claim 27 wherein said first set of keys comprises at
2 least two rows of keys, each of said rows having at least two keys.

1 29. A keyboard assembly as in claim 28 wherein said hinge member is an enclosure
2 wall when said keyboard assembly is collapsed to a folded configuration.

1 30. A keyboard assembly comprising:

2 a first keyboard section including a first frame and a plurality of first keys on said
3 first frame, each of said plurality of first keys having a first keytop and a biasing
4 member below said first keytop, and a first pair of electrical contacts;

5 a second keyboard section including a second frame and a plurality of second
6 keys on said second frame, each of said plurality of second keys having a second keytop
7 and a biasing member below said second keytop and a second pair of electrical contacts;
8 and

9 wherein said first keyboard section is attached in a plane to said second keyboard
10 section in an operating position and is detachable to a storage position in which said
11 first and second keytops contact each other such that said biasing members are
12 compressed and said first pair of electrical contacts are shorted and said second pair of
13 electrical contacts are shorted.

1 31. A keyboard assembly as in claim 30 wherein a latch secures said first keyboard
2 section and said second keyboard section together to maintain said first and said second
3 keytops in contact such that said first pair of electrical contacts and said second pair of
4 electrical contacts are maintained in a shorted state.

1 32. A keyboard assembly comprising:

2 a first keyboard section;

3 a second keyboard section foldable over said first keyboard section in a folding
4 direction, wherein said keyboard assembly is foldable between a folded position and an
5 unfolded position; and

6 a mechanism that keeps said keyboard assembly generally flat when in an
7 unfolded position, said mechanism providing resistance against folding of said first
8 and second keyboard sections in a direction opposite said folding direction while
9 allowing folding in said opposite direction when sufficient force is applied to
10 overcome said resistance.

1 33. The keyboard assembly of claim 32 wherein said mechanism includes a hinge,
2 and said hinge couples said first keyboard section to said second keyboard section.

1 34. The keyboard assembly of claim 33 wherein said hinge includes a hinge member
2 extending between said first keyboard section and said second keyboard section, said
3 first keyboard section includes a first frame, said first frame includes a hinge element
4 which contains an axle and a ridge, and said ridge engages said hinge member to
5 provide said resistance against folding in said opposite direction.

1 35. The keyboard assembly of claim 34 wherein said ridge moves past said hinge
2 member when sufficient force is applied to overcome said resistance.

1 36. The keyboard assembly of claim 35 wherein said keyboard assembly can be
2 restored to said generally flat unfolded position by moving said ridge back to its
3 position engaged with said hinge member.

1 37. A method for activating a personal digital assistant (PDA) from a low power
2 state, in which a software driver for a peripheral device is disabled in the low power
3 state, said peripheral device being coupled to said PDA and said peripheral device
4 being used to activate said PDA, said method comprising:

5 transmitting a control signal from said peripheral to said PDA;

6 storing a peripheral data for later transmission to said PDA;
7 transmitting a peripheral identifier to said PDA;
8 transmitting said peripheral data to said PDA.

1 38. A method as in claim 37 wherein said method is performed entirely by said
2 peripheral.

1 39. A method as in claim 38 wherein said peripheral is a collapsible keyboard and
2 said peripheral data is a key code identifying a key which was pressed and wherein
3 pressing said key causes said control signal to be transmitted and wherein said
4 peripheral data is transmitted after first transmitting said control signal and then
5 transmitting said peripheral data.

1 40. A method as in claim 39 wherein said control signal is a hot sync signal used in
2 PDAs which run the Palm operating system.

1 41. A method as in claim 37 further comprising:

2 receiving said control signal on said PDA and entering a high power state on
3 said PDA;

4 intercepting, by said software driver, said control signal;

5 determining whether said peripheral identifier has been received by said PDA;

6 receiving said peripheral data after determining said peripheral identifier has
7 been received.

1 42. A method as in claim 41 wherein said intercepting prevents an operating system
2 on said PDA from acting on said control signal.

1 43. A method as in claim 42 wherein if said peripheral data is not received within a
2 predetermined period of time then said control signal is passed to said operating
3 system for processing by said operating system.

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